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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/886,388	07/01/97	SANDHU G	MI22-713

021567
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MM42/1109

EXAMINER	
CRANE,S	
ART UNIT	**PAPER NUMBER**
2811	

DATE MAILED: 11/09/99

Please find below and/or attached an Office communication concerning this application or pr ceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/886,388	Sandhu et al.
Examiner	**Group Art Unit**
Sara W. Crane	2811

☒ Responsive to communication(s) filed on *Aug 16, 1999* .

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *44-45 and 51-67* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *44-45 and 51-67* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

In the paper of 8/16/99, Applicant submits new claims numbered 46-63. These claims have been renumbered under Rule 126 as claims 51-67.

Claim Rejections - 35 USC § 112

Claims 44-45 and 51-67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 44, "a minimum photolithographic feature dimension with which the capacitors are fabricated" is not clear, because the phrase apparently refers to a process of making, i.e., a process utilizing photolithography, but the reference to photolithography has no antecedent. The claim thus encompasses capacitors made by any method at all, and yet the "lateral spacing" dimension is defined only for those capacitors made using a photolithographic processing step. This is contradictory and confusing. (What if the capacitor is made using, for example, e-beam lithography? Is the "minimum photolithographic feature" now zero?) In claims 54 and 61, "a minimum photolithographic feature dimension" is similarly unclear.

Also, the "minimum photolithographic feature dimension with which the capacitors are fabricated" is indefinite, because one cannot determine what this dimension might be without reference to a process of making, and no process of making is specified. The claim language apparently attempts to make reference to any photolithographic processes that might be used to

make the stacked capacitor, including processes that have not yet been invented. Processes change over time, and the "minimum photolithographic feature dimension" that one can obtain generally becomes smaller as time goes by, although one cannot know how much smaller because one cannot know what precisely what improvements to the technology will be made in the future. Recitation of a "minimum photolithographic feature" is therefore indefinite on its face, one reason being that one cannot claim a feature size which varies over time. "[A] minimum photolithographic feature dimension" is similarly unclear.

The "minimum photolithographic feature dimension with which the capacitors are fabricated" is indefinite for the further reason that one cannot determine what part of the capacitor has this dimension. Is this the width of the lower capacitor plate? Is the interconnect filling the via between the lower capacitor plate and the underlying source/drain region a part of the capacitor? Is the transistor part of the capacitor? "[A] minimum photolithographic feature dimension" is similarly unclear.

Claims 44-67 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Each of the independent claims recites a dimension corresponding to "a minimum photolithographic feature dimension." Claim language in a patent is intended to describe structure that exists at a time when a patent might be enforced against an alleged infringer, i.e., in the

future. The claims thus attempt to encompass photolithographic processes that would be used in the future. The specification does not disclose the photolithographic processes that will be used in the future, however, because one cannot know what these processes will be. In particular, the claim language intends to encompass dimensions smaller than "a minimum photolithographic feature dimension." Examiner understands that this is the smallest dimension that can be produced by a photolithographic process used in making the device. Dimensions produced by photolithographic processes in the future will no doubt be smaller than dimensions that can be produced today, because processes are constantly being improved. We do not now know, however, precisely how such processes will be improved, and no specification could possibly teach presently unknown improvements to photolithographic processes. Claims cannot encompass photolithographic feature dimensions (or any other structure) that cannot be produced by one of ordinary skill at the time the specification is filed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 44-45 and 51 to 67, insofar as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Morihara et al. ("Disk-Shaped Stacked Capacitor Cell for 256 Mb Dynamic Random-Access Memory), cited by Applicant.

With respect to claim 44, the abstract teaches that the distance between adjacent storage node patterns is less than can be realized by lithographic resolution. This appears to fully anticipate the claim.

With respect to claim 45, the Morihara capacitors have, in cross-section as shown in figure 2, "laterally opposed fins interconnected with an projecting laterally from the stem," where the hollow "stem" would be the hollow cup-shaped part of the storage node. The "minimum width" of this hollow "stem" would be the thickness of the layer deposited between steps (a) and (b) in figure 2. This thickness is not determined photolithographically, and from the figures it is clear that this thickness is less that the photolithographic resolution of 0.2 to 0.25 μm as discussed with respect to figure 3.

Each of the newly-submitted claims describes structural features of the Morihara device as taught in Morihara figure 2.

Conclusion

Applicant's arguments filed with respect to the pending claims have been fully considered but they are not persuasive. Applicant argues that references to photolithographic features size is not indefinite because the specifications teaches photolithographic processes. Teachings of the

specification cannot be read into the claims, however. The claim language is indefinite because one cannot determine from *the language of the claims* what photolithographic processes are to be used. Applicant also apparently argues that the minimum photolithographic feature size intended by the claim language is indeed supposed to encompass photolithographic feature sizes that cannot be produced by processes known to those of ordinary skill at the time the specification was filed, or by processes taught in Applicant's specification. Such feature sizes are not only indefinite, but are not enabled by the teachings of the specification. The problem is not that such processes will be carried out in the future, but that one cannot now determine what those processes will be. Applicant notes with respect to the Morihara references that Morihara points out problems with the prior art. Such teachings do not "teach away" from the Morihara improvements. One would be motivated to use the Morihara device because of the problems with the prior art. Applicant discusses the "stem" of the Morihara device in connection with figure 2(a). As noted above, and in the previous Office action, the examiner reads the "stem" on the hollow cup to which the fins are attached, and this is not shown in figure 2(a).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (703) 308-4894.

The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Sara W. Crane
Examiner
Art Unit 2811